

SEQUENCE LISTING

<110> Nakamura, Yusuke
Furukawa, Yoichi

<120> GENE AND PROTEIN RELATING TO HEPATOCELLULAR CARCINOMA AND METHODS OF USE THEREOF

<130> ONC-A0206P-US (CIP)

<150> US 60/324, 261

<151> 2001-09-25

<150> US 60/391, 666

<151> 2002-06-26

<150> CA 2, 399, 569

<151> 2002-08-23

<150> US 60/450, 644

<151> 2003-02-28

<160> 80

<170> PatentIn version 3.1

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                               Met Glu Pro Leu Lys Val
                               1               5

gaa aag ttc gca acc gcc aac agg gga aac ggg ctg cgc gcc gtg acc      161
Glu Lys Phe Ala Thr Ala Asn Arg Gly Asn Gly Leu Arg Ala Val Thr
                10                15                20

ccg ctg cgc ccc gga gag cta ctc ttc cgc tcg gat ccc ttg gcg tac      209
Pro Leu Arg Pro Gly Glu Leu Leu Phe Arg Ser Asp Pro Leu Ala Tyr
                25                30                35

acg gtg tgc aag ggg agt cgt ggc gtc gtc tgc gac cgc tgc ctt ctc      257
Thr Val Cys Lys Gly Ser Arg Gly Val Val Cys Asp Arg Cys Leu Leu
                40                45                50

ggg aag gaa aag ctg atg cga tgc tct cag tgc cgc gtc gcc aaa tac      305
Gly Lys Glu Lys Leu Met Arg Cys Ser Gln Cys Arg Val Ala Lys Tyr
                55                60                65                70

tgt agt gct aag tgt cag aaa aaa gct tgg cca gac cac aag cgg gaa      353

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| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|------|
| Cys | Ser | Ala | Lys | Cys | Gln | Lys | Lys | Ala | Trp | Pro | Asp | His | Lys | Arg | Glu | | |
| | | | | 75 | | | | | 80 | | | | | 85 | | | |
| tgc | aaa | tgc | ctt | aaa | agc | tgc | aaa | ccc | aga | tat | cct | cca | gac | tcc | gtt | | 401 |
| Cys | Lys | Cys | Leu | Lys | Ser | Cys | Lys | Pro | Arg | Tyr | Pro | Pro | Asp | Ser | Val | | |
| | | | 90 | | | | | 95 | | | | | 100 | | | | |
| cga | ctt | ctt | ggc | aga | gtt | gtc | ttc | aaa | ctt | atg | gat | gga | gca | cct | tca | | 449 |
| Arg | Leu | Leu | Gly | Arg | Val | Val | Phe | Lys | Leu | Met | Asp | Gly | Ala | Pro | Ser | | |
| | | | 105 | | | | 110 | | | | | 115 | | | | | |
| gaa | tca | gag | aag | ctt | tac | tca | ttt | tat | gat | ctg | gag | tca | aat | att | aac | | 497 |
| Glu | Ser | Glu | Lys | Leu | Tyr | Ser | Phe | Tyr | Asp | Leu | Glu | Ser | Asn | Ile | Asn | | |
| | 120 | | | | | 125 | | | | | 130 | | | | | | |
| aaa | ctg | act | gaa | gat | aag | aaa | gag | ggc | ctc | agg | caa | ctc | gta | atg | aca | | 545 |
| Lys | Leu | Thr | Glu | Asp | Lys | Lys | Glu | Gly | Leu | Arg | Gln | Leu | Val | Met | Thr | | |
| | 135 | | | | 140 | | | | | 145 | | | | | 150 | | |
| ttt | caa | cat | ttc | atg | aga | gaa | gaa | ata | cag | gat | gcc | tct | cag | ctg | cca | | 593 |
| Phe | Gln | His | Phe | Met | Arg | Glu | Glu | Ile | Gln | Asp | Ala | Ser | Gln | Leu | Pro | | |
| | | | | 155 | | | | | 160 | | | | | 165 | | | |
| cct | gcc | ttt | gac | ctt | ttt | gaa | gcc | ttt | gca | aaa | gtg | atc | tgc | aac | tct | | 641 |
| Pro | Ala | Phe | Asp | Leu | Phe | Glu | Ala | Phe | Ala | Lys | Val | Ile | Cys | Asn | Ser | | |
| | | | 170 | | | | | 175 | | | | | 180 | | | | |
| ttc | acc | atc | tgt | aat | gcg | gag | atg | cag | gaa | gtt | ggt | gtt | ggc | cta | tat | | 689 |
| Phe | Thr | Ile | Cys | Asn | Ala | Glu | Met | Gln | Glu | Val | Gly | Val | Gly | Leu | Tyr | | |
| | | 185 | | | | | 190 | | | | | 195 | | | | | |
| ccc | agt | atc | tct | ttg | ctc | aat | cac | agc | tgt | gac | ccc | aac | tgt | tcg | att | | 737 |
| Pro | Ser | Ile | Ser | Leu | Leu | Asn | His | Ser | Cys | Asp | Pro | Asn | Cys | Ser | Ile | | |
| | 200 | | | | | 205 | | | | | 210 | | | | | | |
| gtg | ttc | aat | ggg | ccc | cac | ctc | tta | ctg | cga | gca | gtc | cga | gac | atc | gag | | 785 |
| Val | Phe | Asn | Gly | Pro | His | Leu | Leu | Leu | Arg | Ala | Val | Arg | Asp | Ile | Glu | | |
| | 215 | | | | 220 | | | | 225 | | | | | | 230 | | |
| gtg | gga | gag | gag | ctc | acc | atc | tgc | tac | ctg | gat | atg | ctg | atg | acc | agt | | 833 |
| Val | Gly | Glu | Glu | Leu | Thr | Ile | Cys | Tyr | Leu | Asp | Met | Leu | Met | Thr | Ser | | |
| | | | | 235 | | | | 240 | | | | | 245 | | | | |
| gag | gag | cgc | cgg | aag | cag | ctg | agg | gac | cag | tac | tgc | ttt | gaa | tgt | gac | | 881 |
| Glu | Glu | Arg | Arg | Lys | Gln | Leu | Arg | Asp | Gln | Tyr | Cys | Phe | Glu | Cys | Asp | | |
| | | | 250 | | | | 255 | | | | | 260 | | | | | |
| tgt | ttc | cgt | tgc | caa | acc | cag | gac | aag | gat | gct | gat | atg | cta | act | ggt | | 929 |
| Cys | Phe | Arg | Cys | Gln | Thr | Gln | Asp | Lys | Asp | Ala | Asp | Met | Leu | Thr | Gly | | |
| | | 265 | | | | | 270 | | | | | 275 | | | | | |
| gat | gag | caa | gta | tgg | aag | gaa | gtt | caa | gaa | tcc | ctg | aaa | aaa | att | gaa | | 977 |
| Asp | Glu | Gln | Val | Trp | Lys | Glu | Val | Gln | Glu | Ser | Leu | Lys | Lys | Ile | Glu | | |
| | 280 | | | | | 285 | | | | | 290 | | | | | | |
| gaa | ctg | aag | gca | cac | tgg | aag | tgg | gag | cag | gtt | ctg | gcc | atg | tgc | cag | | 1025 |
| Glu | Leu | Lys | Ala | His | Trp | Lys | Trp | Glu | Gln | Val | Leu | Ala | Met | Cys | Gln | | |
| | 295 | | | | 300 | | | | | 305 | | | | | 310 | | |
| gcg | atc | ata | agc | agc | aat | tct | gaa | cgg | ctt | ccc | gat | atc | aac | atc | tac | | 1073 |

| | |
|---|------|
| Ala Ile Ile Ser Ser Asn Ser Glu Arg Leu Pro Asp Ile Asn Ile Tyr | |
| 315 320 325 | |
| cag ctg aag gtg ctc gac tgc gcc atg gat gcc tgc atc aac ctc ggc | 1121 |
| Gln Leu Lys Val Leu Asp Cys Ala Met Asp Ala Cys Ile Asn Leu Gly | |
| 330 335 340 | |
| ctg ttg gag gaa gcc ttg ttc tat ggt act cgg acc atg gag cca tac | 1169 |
| Leu Leu Glu Glu Ala Leu Phe Tyr Gly Thr Arg Thr Met Glu Pro Tyr | |
| 345 350 355 | |
| agg att ttt ttc cca gga agc cat ccc gtc aga ggg gtt caa gtg atg | 1217 |
| Arg Ile Phe Phe Pro Gly Ser His Pro Val Arg Gly Val Gln Val Met | |
| 360 365 370 | |
| aaa gtt ggc aaa ctg cag cta cat caa ggc atg ttt ccc caa gca atg | 1265 |
| Lys Val Gly Lys Leu Gln Leu His Gln Gly Met Phe Pro Gln Ala Met | |
| 375 380 385 390 | |
| aag aat ctg aga ctg gct ttt gat att atg aga gtg aca cat ggc aga | 1313 |
| Lys Asn Leu Arg Leu Ala Phe Asp Ile Met Arg Val Thr His Gly Arg | |
| 395 400 405 | |
| gaa cac agc ctg att gaa gat ttg att cta ott tta gaa gaa tgc gac | 1361 |
| Glu His Ser Leu Ile Glu Asp Leu Ile Leu Leu Glu Glu Cys Asp | |
| 410 415 420 | |
| gcc aac atc aga gca tcc taa gggaacgcag tcagagggaa atacggcgtg | 1412 |
| Ala Asn Ile Arg Ala Ser | |
| 425 | |
| tgtctttgtt gaatgcctta ttgaggtcac acactctatg ctttgttagc tgtgtgaacc | 1472 |
| tctcttattg gaaattctgt tccgtgtttg tgtaggtaaa taaaggcaga catggtttgc | 1532 |
| aaaccacaag aatcattagt tgtagagaag cacgattata ataaattcaa aacatttggt | 1592 |
| tgaggatgcc aaaaaaaaaa aaaaaaaaaa | 1622 |

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 35 40 45
 Cys Asp Arg Cys Leu Leu Gly Lys Glu Lys Leu Met Arg Cys Ser Gln
 50 55 60
 Cys Arg Val Ala Lys Tyr Cys Ser Ala Lys Cys Gln Lys Lys Ala Trp
 65 70 75 80

Pro Asp His Lys Arg Glu Cys Lys Cys Leu Lys Ser Cys Lys Pro Arg
 85 90 95
 Tyr Pro Pro Asp Ser Val Arg Leu Leu Gly Arg Val Val Phe Lys Leu
 100 105 110
 Met Asp Gly Ala Pro Ser Glu Ser Glu Lys Leu Tyr Ser Phe Tyr Asp
 115 120 125
 Leu Glu Ser Asn Ile Asn Lys Leu Thr Glu Asp Lys Lys Glu Gly Leu
 130 135 140
 Arg Gln Leu Val Met Thr Phe Gln His Phe Met Arg Glu Glu Ile Gln
 145 150 155 160
 Asp Ala Ser Gln Leu Pro Pro Ala Phe Asp Leu Phe Glu Ala Phe Ala
 165 170 175
 Lys Val Ile Cys Asn Ser Phe Thr Ile Cys Asn Ala Glu Met Gln Glu
 180 185 190
 Val Gly Val Gly Leu Tyr Pro Ser Ile Ser Leu Leu Asn His Ser Cys
 195 200 205
 Asp Pro Asn Cys Ser Ile Val Phe Asn Gly Pro His Leu Leu Leu Arg
 210 215 220
 Ala Val Arg Asp Ile Glu Val Gly Glu Glu Leu Thr Ile Cys Tyr Leu
 225 230 235 240
 Asp Met Leu Met Thr Ser Glu Glu Arg Arg Lys Gln Leu Arg Asp Gln
 245 250 255
 Tyr Cys Phe Glu Cys Asp Cys Phe Arg Cys Gln Thr Gln Asp Lys Asp
 260 265 270
 Ala Asp Met Leu Thr Gly Asp Glu Gln Val Trp Lys Glu Val Gln Glu
 275 280 285
 Ser Leu Lys Lys Ile Glu Glu Leu Lys Ala His Trp Lys Trp Glu Gln
 290 295 300
 Val Leu Ala Met Cys Gln Ala Ile Ile Ser Ser Asn Ser Glu Arg Leu
 305 310 315 320
 Pro Asp Ile Asn Ile Tyr Gln Leu Lys Val Leu Asp Cys Ala Met Asp
 325 330 335
 Ala Cys Ile Asn Leu Gly Leu Leu Glu Glu Ala Leu Phe Tyr Gly Thr
 340 345 350
 Arg Thr Met Glu Pro Tyr Arg Ile Phe Phe Pro Gly Ser His Pro Val
 355 360 365
 Arg Gly Val Gln Val Met Lys Val Gly Lys Leu Gln Leu His Gln Gly
 370 375 380
 Met Phe Pro Gln Ala Met Lys Asn Leu Arg Leu Ala Phe Asp Ile Met
 385 390 395 400

Arg Val Thr His Gly Arg Glu His Ser Leu Ile Glu Asp Leu Ile Leu
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Leu Leu Glu Glu Cys Asp Ala Asn Ile Arg Ala Ser
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 ctca 64

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<400> 42
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<210> 44
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 gcccgcgtct gaacctccg cgccgccccg gccccagtgg aaagacgcgc aggcaaaacg 180
 caccacgtga cggagcgtga ccgcgcgccg agcgcgcgcc aaggtcgggc aggaagaggg 240
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 caccnnnnnt ttttacatca ggttgttttt ctgtttggtt ttttttttac accacgttta 540
 tacgccgtg cacggtttac cactgaaaac acctttcacc tacaggatgat atcttttaac 600

| | | | | | | |
|------------|-------------|------------|------------|------------|------------|------|
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| ttctgcagat | atccatcaca | ctggcggccg | ctcgagttag | gcggaaagaa | ccagctgggg | 720 |
| ctctaggggg | tatccccacg | cgccctgtag | cggcgcatta | agcgcggcgg | gtgtggtggt | 780 |
| tacgcgcagc | gtgaccgcta | cacttgccag | cgccctagcg | cccgtccctt | tcgctttctt | 840 |
| cccttccttt | ctcgccacgt | tcgcgggctt | tcccgtcaa | gctctaaatc | gggggctccc | 900 |
| tttagggttc | cgatttagtg | ctttacggca | cctcgacccc | aaaaaacttg | attagggtag | 960 |
| tggttcacgt | agtggggccat | cgccctgata | gacggttttt | cgccctttga | cgttggagtc | 1020 |
| cacgttcttt | aatagtggac | tcttgttcca | aactggaaca | acactcaacc | ctatctcggt | 1080 |
| ctattctttt | gatttataag | ggattttgcc | gatttcggcc | tattggttaa | aaaatgagct | 1140 |
| gatttaacaa | aaatttaacg | cgaattaatt | ctgtggaatg | tgtgtcagtt | agggtgtgga | 1200 |
| aagtccccag | gctccccagc | aggcagaagt | atgcaaagca | tgcattctca | ttagtcagca | 1260 |
| accaggtgtg | gaaagtcccc | aggctcccca | gcaggcagaa | gtatgcaaag | catgcatctc | 1320 |
| aattagtcag | caaccatagt | cccgccccta | actccgccc | tcccgcccct | aactccgccc | 1380 |
| agttccgccc | attctccgcc | ccatggctga | ctaatttttt | ttatttatgc | agaggccgag | 1440 |
| gccgcctctg | cctctgagct | attccagaag | tagtgaggag | gcttttttgg | aggcctaggc | 1500 |
| ttttgcaaaa | agctcccggg | agcttgtata | tccattttcg | gatctgatca | agagacagga | 1560 |
| tgaggatcgt | ttcgcattgat | tgaacaagat | ggattgcacg | caggttctcc | ggccgcttgg | 1620 |
| gtggagaggc | tattcggcta | tgactgggca | caacagacaa | tcggctgctc | tgatgccgcc | 1680 |
| gtgttccggc | tgtcagcgca | ggggcgccc | gttctttttg | tcaagaccga | cctgtccggt | 1740 |
| gccctgaatg | aactgcagga | cgaggcagcg | cggctatcgt | ggctggccac | gacgggcgtt | 1800 |
| ccttgccgag | ctgtgctcga | cgttgctact | gaagcgggaa | gggactggct | gctattgggc | 1860 |
| gaagtgccgg | ggcaggatct | cctgtcatct | caccttgctc | ctgccgagaa | agtatccatc | 1920 |
| atggctgatg | caatgcggcg | gctgcatacg | cttgatccgg | ctacctgccc | attcgaccac | 1980 |
| caagcgaaac | atcgcatcga | gcgagcacgt | actcggatgg | aagccggtct | tgtcgatcag | 2040 |
| gatgatctgg | acgaagagca | tcaggggctc | gcgccagccg | aactgttcgc | caggctcaag | 2100 |
| gcgcgcatgc | ccgacggcga | ggatctcgct | gtgaccatg | gcgatgcctg | cttgccgaat | 2160 |
| atcatggtgg | aaaatggccg | cttttctgga | ttcatcgact | gtggccggct | gggtgtggcg | 2220 |
| gaccgctatc | aggacatagc | gttggtacc | cgtgatattg | ctgaagagct | tggcggcgaa | 2280 |
| tgggctgacc | gcttcctcgt | gctttacggt | atcgccgctc | ccgattcgca | gcgcacgcc | 2340 |
| ttctatcgcc | ttcttgacga | gttcttctga | gcgggactct | ggggttcgaa | atgaccgacc | 2400 |

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| gcaaagcatc | acaaatttca | caaataaagc | atTTTTTTTca | ctgcattcta | gttgttggtt | 2640 |
| gtccaaactc | atcaatgtat | cttatcatgt | ctgtataaccg | tcgacctcta | gctagagctt | 2700 |
| ggcgtaatca | tgggtcatagc | tgtttctctgt | gtgaaattgt | tatccgctca | caattccaca | 2760 |
| caacatacga | gccggaagca | taaagtgtaa | agcctgggggt | gcctaataag | tgagctaact | 2820 |
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